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Northeast Research Farm Summary

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Abstract
Contains the Farm and Weather Summary for the Northeast Research and Demonstration Farm.

Keywords
Agronomy

Disciplines
Agricultural Science | Agriculture | Agronomy and Crop Sciences | Meteorology | Natural Resources and Conservation

Northeast Research Farm Summary

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2014–2015

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Farm and Weather Summary

Ken Pecinovsky, farm superintendent

Farm Comments

Field days and tours. More than 700 people attended eight field days/farm tours at the ISU Northeast Research Farm (NERF) in 2014. More than 5,000 people visited the Borlaug Learning Center (BLC). The BLC hosted nearly 100 events ranging from farmland leasing/insurance meetings to agronomy, horticulture, and livestock extension trainings. The summer field day included information on economic thresholds of crop insects, managing herbicide resistant weeds, fuel efficiency during field operations, and planting date trials conducted on the research farm. The fall field day included information on soil fertility recommendations, crop disease severity/management, a demonstration of unmanned aerial vehicles (UAV), and grain market projections. Soil drainage management was presented during a tile drainage installation demonstration on four acres of untiled ground.

New projects. Iowa Crop Improvement Association corn variety trials, Jim Rouse; Evaluation of in-furrow planter applied products and seed treatments, various researchers; Evaluation of bio-fungicides and seed treatments in soybeans, XB Yang; and Evaluation of a nematicide seed treatment for SCN management, ISU NERF.

Crop Season Comments

Field work began April 10 (16 days earlier than in 2013). On April 11, oat and alfalfa plots were planted and some nitrogen fertilizer was applied. Only three more days in April were suitable for field work. The first planting window occurred May 6–8, followed by a nine-day rain delay. Planting resumed May 18, finishing corn and soybean plantings on May 22 and May 25, respectively.

Corn harvest began October 17 (same day as 2013 and one month later than in 2012) and was completed November 3. Corn yields varied according to planting date, but were slightly below the long term average, mostly as a result of a minor June 29 hailstorm and a wet latter half of June, followed by drier than normal July through August. Despite a summer with minimal heat, the October 11 frost date allowed late-planted corn to mature. Corn yields on rotated acres ranged from 150 to 230 bushels/acre and averaged 185 bushels/acre. Continuous corn yields ranged from 150 to 200 bushels/acre and averaged 170 bushels/acre.

Soybean harvest began September 28 and was completed October 17. Soybean yields also were slightly below average. Soybean aphids reached economic thresholds by August 22, but populations crashed by themselves soon after. Yields ranged from 50 to 75 bushels/acre and averaged 53 bushels/acre.

Weather Comments

Winter 2013–2014. The first measurable snowfall occurred November 11, 2013, and the last snow for the season was on April 14, 2014, with a total of 44.7 in. recorded (10.5 in. more than the previous winter). The 4-in. soil temperature remained below 50^{o}F after October 28, 2013, and the topsoil froze on November 23, stopping tillage.

Spring 2014. The frost was out of the top 2 ft of soil after March 29 (one month earlier than 2013), and the 4-in. average soil temperature remained above 50^{o}F on May 3. In April, five days were suitable for field work and 18 days had precipitation. This resulted in 7.2 in. of rain and 2.0 in. of snow, which was 3.5 in. above the 30-year average. The last killing frost was April 22.

Summer 2014. Rain occurred on 16 days in June, but unlike 2013, farmers had the chance to get everything planted in May. The second half of June was extremely wet, 9.64 in. of rain delayed late fertilizer or weed control activities. In July, measurable rain fell on five days but due to excessive late June rain and below normal air temperatures for July, crops were not moisture stressed. Corn pollination was about two weeks later than normal due to some delayed planting and cooler July air temperatures. August and September heat units were just slightly above normal, which allowed corn to mature prior to frost. Because minimal days were above 85°F, yields were maintained, despite below normal rainfall for July through October. The soybean yields were slightly below average, partially due to late plantings in cold soils combined with excessive moisture in late June. Soybean branches/leaves usually cover the soil between 30 in. rows by August 1 and in 2014, it occurred a month later.

Fall 2014. Physiological maturity of corn occurred during late September/early October, depending on variety and planting date. The first killing freeze occurred October 11 (28°F), allowing late-May planted crops to mature. A total of 2,638 heat units were recorded from May through September of 2014, the same as 2013. From April through November, 31.81 in. of rain was recorded, which was 2.47 in. above the 30-year average.

September through October rainfall was 0.98 in. below normal with minimal harvest delays. This was helpful due to the late start of harvest. Corn harvested the third and fourth week of October averaged 25.8 and 22.1 percent grain moisture, respectively. Corn harvested the first week of November averaged 20.7 percent grain moisture with minimal dry down in the weeks following, due to November air temperatures 6.9°F below the 30-year average. The 4-in. soil temperature remained below 50°F after October 28. Topsoil froze on November 13, and briefly thawed out in late November and mid-December.

Acknowledgements

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Table 1. Monthly rainfall and average temperatures during the 2014 growing season.

	Rainfall (in.)			Temperature (°F)*			
Month	NERF	Departure from normal	No. days of rain	NERF	Departure from normal	Growing degree days	Days 90°F+
April	7.21	+3.50	16	44.7	-3.1	134	0
May	2.87	-1.57	12	60.2	+0.8	390	1
June	10.35	+5.24	15	70.5	+1.6	611	1
July	1.41	-3.28	5	68.6	-3.4	576	1
August	3.82	-0.44	10	71.2	+1.6	652	1
September	2.78	-0.01	9	62.0	+0.1	409	0
October	2.53	-0.08	10	49.2	-0.2	173	0
November	0.84	-0.89	8	27.9	-6.9		0
Total	31.81	+2.47	85	1st hard freeze: 28°F (10/11/14)			4

*172 frost-free days

Research Farm Projects

Research Project/Demonstration	Project Leader
Alfalfa nutrient and management studies	B. Lang
Asparagus variety trial	P. O'Malley
Bt trait/corn variety × fungicide study	ISU NERF
Corn planting date × relative maturity study	M. Licht
Cover crop × N fertilizer timing × tillage study	J. Sawyer
Cover crop mixture studies in corn and soybeans	E. Juchems
Crop N rate × crop rotation studies	J. Sawyer/A. Mallarino
Crop rotation × corn variety × tillage × planting population study	ISU NERF
Evaluation of corn rootworm insecticides and genetic seed traits	A. Gassmann
Evaluation of energy usage with field implements and corn dryers	M. Hanna
Evaluation of foliar fungicides, application timings, and seed treatments on corn and soybean diseases	A. Robertson/D. Mueller/ XB Yang/S. Navi
Evaluation of foliar products on corn yields	T. Basol
Evaluation of in-furrow, vegetative, and reproductive stage fungicide	ISU NERF
Evaluation of nematicidal seed treatment on soybean yield	ISU NERF
Evaluation of planter applied in-furrow liquid treatment strategies	B. Lang
Evaluation of soybean aphid flight populations from a suction trap monitor	D. Voegtlin/ D. Lagos-Kutz
Evaluation of soybean aphid foliar and seed treatment insecticides	E. Hodgson
Evaluation of water tables, tiling methods, and tile spacing distances	ISU NERF
Evaluation of weed management strategies in corn and soybeans	M. Owen
Home demonstration garden	C. Haynes
Hydrogeology water quality studies in the Devonian Aquifer	B. Simpkins
Insecticide and fungicide interactions in soybeans	D. Mueller
Iowa Crop Improvement Association corn and soybean variety trials	J. Rouse
K rate × Bt rootworm isoline comparison study (2 studies)	A. Mallarino
Long-term P-K rate study	A. Mallarino
Long-term tillage × crop rotation studies	M. Al-Kaisi/M. Hanna
Nitrogen rates applied on reproductive stage soybean	ISU NERF
Nitrogen rates following fall injected swine manure	ISU NERF
Oat variety study	ISU NERF
Pawpaw tree winter hardiness demonstration	P. O'Malley
Phosphorus and potassium placement and rate in different tillages	A. Mallarino
Phosphorus rate × P source study	A. Mallarino
Rate of lime study	ISU NERF
Soybean planting date × relative maturity study	M. Licht
Strip cropping effects on individual corn row yields	ISU NERF
Water quality study (cover crops, crop rotation, fertilizer source/application timing)	M. Helmers/A. Mallarino
Water quality tracing of antibiotics in soils with manure applications	M. Soupir/T. Moorman
Water quality with use of bioreactor	M. Helmers

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Dennis Weibke
Don Vetter
Gandy Company
George Cummins
ISU Entomology Department
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Jim Johnson
Johnson Drainage Plows
Kinze Manufacturing
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MBS Farms / Farmers Feed & Grain
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Raven Industries
Smidt Crop Management, Inc.
Spraying Systems Company
Stutzman's Incorporated
Sukup Manufacturing
Syngenta Crop Protection
Syngenta NK Brand Seeds
Winfield Solutions, LLC
Yetter Manufacturing

The mention of firm names or trade products does not imply that they are endorsed over other firms or similar products not mentioned.

Northeast Research and Demonstration Farm
3321 290th Street
Nashua, IA 50658

Take the Nashua exit off Highway 27 (218), go 1.2 miles west on Highway B60, then one mile south on gravel (Windfall Ave.), and 0.2 mile east on 290th Street.
To schedule a tour, call 641-435-4864.

Experiments in Previous Annual Reports

Corn and Soybean Production with a Winter Rye Cover Crop RFR-A13118 .....ISRF13-13
Effect of Plant Population and Row Spacing on Soybean Yield RFR-A13117 .....ISRF13-13
Evaluation of Soybean Aphid-resistant Soybean Lines RFR-A13111 .....ISRF13-13
Corn and Soybean Potassium Uptake, Removal with Harvest and Recycling To the Soil RFR-A12109 .....ISRF12-13
Effects of Seed Treatments and a Soil-applied Nematicide on Corn Yields and Nematode Population Densities RFR-A12114 .....ISRF12-13
Regional Corn Re-plant Recommendations RFR-A11120 .....ISRF11-13
Soybean Planting Dates in Northeast Iowa RFR-A11127 .....ISRF11-13
Fertilizer and Swine Manure Management Systems Impact Phosphorus in Soil and Subsurface Tile Drainage RFR-A11115 .....ISRF11-13
Hydraulic Performance of the Denitrification RFR-A11116 .....ISRF11-13
Effect of Sulfur and Boron Fertilization on Alfalfa RFR-A11113 .....ISRF11-13
Corn Population Research RFR-A10112 .....ISRF10-13
The Suction Trap Network Documents Soybean Aphid Migrations RFR-A10105 .....ISRF10-13
Phosphorus and Potassium Placement Methods and Tillage Effects on Yield of Corn and Soybean RFR-A10110 .....ISRF10-13
Crop and Soil Responses to Rates of Lime RFR-A9096 .....ISRF09-13
Role of Directly Connected Macropores on Pathogen Transport to Subsurface Drainage Water RFR-A9116 .....ISRF09-13
Corn Breeding ISRF08-13
Organic vs. Conventional Farming Systems ISRF08-13
Development of Methodologies to Reduce the DCAD of Hay for Transition Dairy Cows ISRF07-13
Sulfur Deficiency in Northeast Iowa Alfalfa Production ISRF06-13
Soybean Yield Influenced by Planting Date and Plant Population ISRF05-13
Effect of Four Tillage Systems and Two Crop Rotations on Placement of P and K ISRF05-13
Evaluation of Hybrid Vigor between Different Alfalfa Varieties ISRF05-13
NO3-N Concentrations in Shallow and Deep Groundwater Wells from 1991–2003 .....ISRF04-13
Runoff Phosphorus Loss as Affected by Tillage, Fertilizer, and Swine Manure Phosphorus Management in Corn-Soybean Production Systems ISRF04-13
Legume Identity and Timing of Incorporation Effect on Soil Responses to Green Manure ISRF03-13
Corn Row Spacing, Plant Density, and Maturity Effects ISRF02-13
Excerpts from Keynote Address: ISU NE Research Farm Silver Anniversary Field Day ISRF01-13
Emergence Characteristics of Several Annual Weeds ISRF00-13
Stalk and Ear Diseases in Bt and Non-Bt Corn Hybrids in Northeast Iowa ISRF00-13
Stand Reduction Effects on Corn Grown at High Population Densities ISRF99-13
Row Width and Variety Effects on Soybean Yield ISRF99-13
Transport of Chemicals through Fractures in Pre-Illinoian Till ISRF99-13
Conversion of CRP to Corn and Soybeans ISRF96-13